

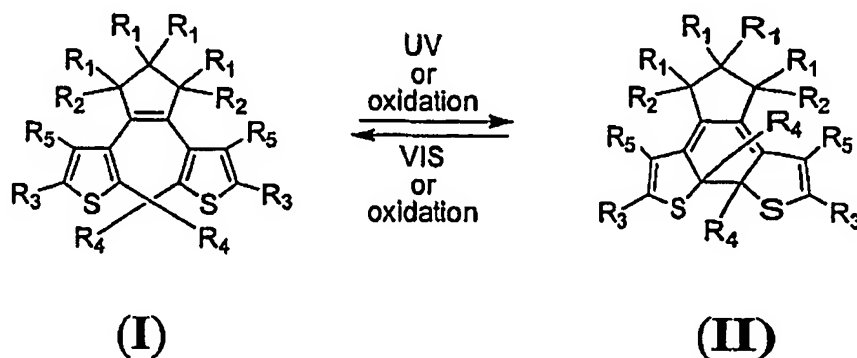
This Listing Of Claims Will Replace All Prior Versions, And Listings, Of Claims In The

Application:

Listing of Claims:

WHAT IS CLAIMED IS:

1. (Currently amended) A compound ~~selected from the group consisting of compounds~~ reversibly convertible ~~under photochromic and electrochromic conditions~~ between a ring-open isomer (I) and a ring-closed isomer (II):



wherein:

each R₁ is independently selected from the group consisting of H and a halogen;

each R₂ is ~~selected from the group consisting of~~ independently H, a halogen, or both R₂ when taken together form CH=CH, or R₂ is CH=CH and forms part of and a polymer backbone;


each R₃ is independently selected from the group consisting of H, a halogen, CO₂Y (Y=H,

Na, alkyl, aryl), and (X=N,O,S);

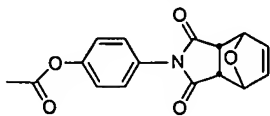
R₄ is ~~selected from the group consisting of~~ alkyl and aryl; and

each R₅ is independently selected from the group consisting of H, alkyl and aryl,

and wherein compound is convertible from said ring-open isomer (I) to said ring-closed isomer (II) under photochemical conditions and from said ring-closed isomer (II) to said ring-open isomer (I) under electrochemical conditions.

2. (Cancelled)
3. (Currently amended) The compound as defined in claim 1, wherein said compound is also convertible from said ring-closed isomer (II) to ring-open isomer (I) under ~~photochromic~~photochemical conditions and from said ring-open isomer (I) to said ring-closed isomer (II) under ~~electrochromic~~electrochemical conditions.
4. (Currently amended) The compound as defined in claim 21, wherein said compound is also convertible from said ring-closed isomer (II) to said ring-open isomer (I) under ~~photochromic~~photochemical conditions.
5. (Currently amended) The compound as defined in claim 41, wherein said compound is also convertible from said ring-open isomer (I) to said ring-closed isomer (II) under ~~photochromic~~electrochemical conditions.
6. (Currently amended) The compound as defined in claim 1, wherein the ~~electrochromic~~electrochemical conversion between said isomers (II) and (I) is catalytic.
7. (Original) The compound as defined in claim 1, wherein R₁ is F.
8. (Original) The compound as defined in claim 1, wherein R₁ and R₂ are F, R₃ and R₄ are  (X=S) and R₅ is H.

9. (Currently amended) The compound as defined in claim 1, wherein R_1 and R_2 are F, each R_3 and R_4 are is independently selected from the group consisting of aryl, and



and R_5 is H.

10. (Original) The compound as defined in claim 1, wherein R_1 and R_2 are F, R_3 is H, R_4 is



($X=S$) and R_5 is H.

11. (Original) The compound as defined in claim 1, wherein R_1 and R_2 are F, R_3 and R_4 are



and R_5 is H.

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Currently amended) The compound as defined in claim 1, wherein R_1 is H, R_2 is $HC=CH$ and forms part of the ~~main chain of a polymer~~ backbone, R_3 is Cl and ~~R_4 and R_5 are~~ is H.

18. (Currently amended) The compound as defined in claim 1, wherein R_1 is H, R_2 is $HC=CH$ and forms part of the ~~main chain of a polymer~~ backbone, R_3 is CO_2CH_3 and ~~R_4 and R_5 are~~ is H.

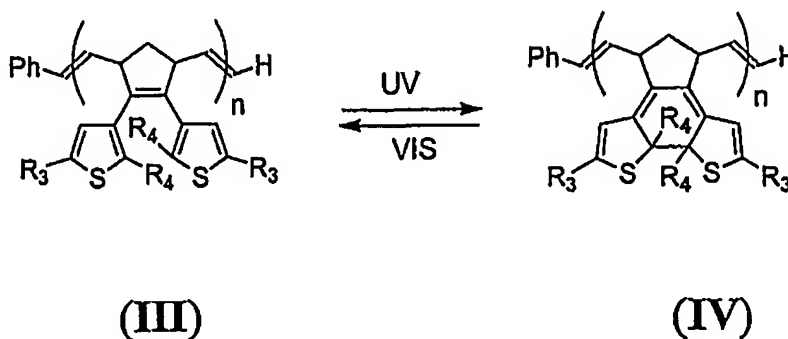
19. (Currently amended) The compound as defined in claim 1, wherein R_1 is H, R_2 is $HC=CH$ and forms part of the ~~main chain of a polymer~~ backbone, R_3 is CO_2H and ~~R_4 and R_5 are~~ is H.

20. (Currently amended) A polymer comprising the compound of claim 1, wherein R_2 is $CH=CH$ and forms part of the polymer backbone ~~main chain~~.



21. (Original) The polymer as defined in claim 20, wherein said polymer is a homopolymer.
22. (Original) The polymer as defined in claim 21, prepared by ring-opening metathesis polymerization.
23. (Currently amended) A method of preparing a compound according to claim 1, comprising carrying out the reaction steps set forth in any one of Schemes 2, ~~5~~, 6, 8, 10, or 12, 13, 14, 16 and 18.
24. (Currently amended) ~~The~~ A method of using use-of-a compound according to ~~any one of~~ claims 1 ~~to 19~~ in an electrochromic and/or photochromic device.
25. (Currently amended) The method use according to claim ~~23~~24, ~~which wherein said~~ electrochromic and/or photochromic device ~~is selected from the group consisting of:~~
- (1) ophthalmic lenses-eyeglasses that change color depending on the ambient light;
 - (2) actinometry an actinometric device; ~~and~~
 - (3) a molecular sensors;
 - ~~(3)(4) novelty items such as photochromic inks;~~
 - (5) photochromic paints and;
 - (6) photochromic fibers;
 - ~~(4)(7) a variable transmission filterfilters—those that on command, regulate the amount and type of light that can be transmitted;~~
 - ~~(5)(8) a high-density optical information storage systemsystems (this invention is particularly well suited to this application as it provides more information storage sites per unit area);~~
 - ~~(6)(9) photo-regulated molecular switches that can be incorporated into molecular scale machinery;~~
 - ~~(7)(10) an optoelectronic systems;~~
 - ~~(8)(11) a reversible holographic systems; and, or~~

(9)(12) molecular switches in molecule-based wires and circuitry.

26. (Currently amended) A polymer comprising a compound interconvertible between a ring-open isomer (III) and a ring-closed isomer (IV):





wherein each R₃ is independently selected from the group consisting of H, a halogen, CO₂Y



(Y=H, Na, alkyl, aryl),  and  (X=N,O,S) and n is between 10 and 100.

27. (Currently amended) The polymer as defined in claim 26, wherein each R₃ is independently selected from the group consisting of Cl, CO₂CH₃ and CO₂H.

28. (New) The compound as defined in claim 1, wherein:
each R₂ is independently H or a halogen, and
each R₃ is independently selected from the group consisting of H, a halogen, CO₂Y (Y=

aryl),  and  (X=N,O,S).


29. (New) The compound as defined in claim 1, wherein:
each R₂ is independently H or F;

each R₃ is independently selected from the group consisting of H, a halogen  and  (X=N,O,S), and

R₅ is H.

30. (New) The compound as defined in claim 1, wherein:



R₁ and R₂ are F;

each R₃ is independently selected from the group consisting of H and  (X=N,O,S), and R₅ is H.


31. (New) A method of preparing a polymer having electrochromic and photochromic properties, comprising utilizing a compound as defined in claim 1, wherein each R₂ is independently H or F, or both R₂ when taken together form CH=CH.

32. (New) The polymer as defined in claim 20, wherein:


R₁ is F;




each R₃ is independently selected from the group consisting of H, a halogen,  and  (X=N,O,S); and R₅ is H.

33. (New) The polymer as defined in claim 20, wherein R₁ is F.

34. (New) The polymer as defined in claim 20, wherein R₁ is F, R₃ and R₄ are  (X=S) and R₅ is H.

35. (New) The polymer as defined in claim 20, wherein R₁ is F, R₃ is aryl and R₅ is H.

36. (New) The polymer as defined in claim 20, wherein R₁ is F, R₃ is H, R₄ is  (X=S) and R₅ is H.

37. (New) The polymer as defined in claim 20, wherein R_1 is F, R_3 and R_4 are  and R_5 is H.
38. (New) A polymer comprising a main chain and the compound of claim 1, wherein each R_2 is independently selected from the group consisting of H and F; and each R_3 is independently selected from the group consisting of H, a halogen, CO_2Y ($\text{Y}=\text{H}$, Na, alkyl, aryl),  and  ($\text{X}=\text{N}, \text{O}, \text{S}$), wherein at least one R_3 is CO_2Y ($\text{Y} = \text{aryl}$) and links the compound to the main chain of the polymer.
39. (New) A method of preparing a film, sheet, fiber or bead having electrochromic and photochromic properties, comprising utilizing a polymer as defined in claim 20.
40. (New) A method of preparing a film, sheet, fiber or bead having electrochromic and photochromic properties, comprising utilizing a polymer as defined in claim 38.
41. (New) A method of using a polymer according to claim 20 in an electrochromic and/or photochromic device.
42. (New) A method of using a polymer according to claim 38 in an electrochromic and/or photochromic device.